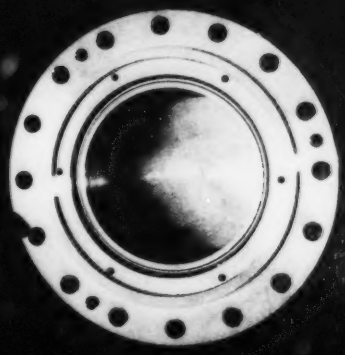
NOVA SCOTIA RESEARCH FOUNDATION CORPORATION

Annual Report 1991/1992



TECHNOLOGY IN ACTION

93-00428/

CORPORATE PROFILE

Nova Scotia Research Foundation Corporation was established in 1946 by the Province of Nova Scotia to use science and technology to assist in the economic development of Nova Scotia. The Corporation pursues two main goals: assistance to industry in the solution of today's technical problems and product/process innovation in anticipation of tomorrow's opportunities. Technical assignments are carried out each year for approximately 650 industry and government clients by the following operating sections:

Industry and Information Services
Technical assistance to small and medium-sized enterprises to improve productivity and technological capabilities.

Field Service
- National Research Council's IRAP Program
- Technical Information/literature searches
- In-plant problem solving
- Technology transfer/acquisition
- Technology patent searches

Information Services
- Technical library
- Standards library
- Computer database searches
- Geophysical data compilation, processing and interpretation

Technical People In Industry Program
- Financial support for new skills to industry

Laboratory and Testing Services
Technical services for industry and government.

Analytical & Environmental Chemistry
- Environmental monitoring of process effluents, waste oils, potable water and sediments
- Lube oil and fuels analysis
- Quality control service, including pressure-treated wood and food
- Forensic analysis
- Indoor air quality monitoring

Microbiology
- Microbiological analysis
- Food quality and sanitation surveys

Materials
- Mechanical and metallurgical testing
- Welding procedure qualifications
- Failure investigations
- Forensic engineering
- Chain fall proof testing
- Dynamometer/load cell calibration
- Ultrasonic testing

Environmental Testing
- Temperature
- Thermal shock
- Humidity
- Vibration
- Mechanical shock
- Hydrostatic pressure
- Altitude
- Salt fog/spray
- Rain
- Sunshine
- Fungus growth
- Package testing
- Combined environments
- Sound level measurements

Process and Environmental Technologies
Applied R&D services for industry and government clients.

Biotechnology
- Biological fertilizers
- Forestry tissue culture
- Biodegradation of pollutants
- Horticultural micropropagation

Corrosion Engineering
- Protective coatings
- Corrosion fatigue testing
- Materials selection
- Corrosion inhibitors

Energy
- Coal gasification
- Fluidized bed combustion
- Synthetic liquid fuels

Waste Management
- Wastewater treatment
- Air pollution abatement
- Solid waste processing
- Resource recovery

Product Engineering
Design, development and prototyping services for SMEs.

Engineering
- Electro mechanical system design
- Bio-resource engineering
- Instrumentation and low cost automation
- Product R&D and evaluation

Industrial Opportunities
- Technical/economic feasibility
- Technology commercialization
- Business opportunity development

Prototype Shop
- Prototype fabrication and testing
- Precision and CAD/CAM machining
- QA system support

Nova Magnetics Ltd.
Patented high efficiency drive components for pumps and blowers.

- Diving/hyperbaric life support systems and components
- Hazardous gas blowers
- Precision 3D CAD/CAM service

"Creating Our Future," the economic strategy prepared by Voluntary Economic Planning and endorsed by the provincial government, outlines ten levers that can be used to shape Nova Scotia's economy to meet the competitive challenges of the 1990's. The Nova Scotia Research Foundation Corporation is actively using three of the levers—technology, productivity and quality—in support of Nova Scotia's economic development. The economic strategy reinforces and adds urgency to our own three-year planning objective—"to have a cohesive set of cost-effective S&T services to assist indigenous companies to enhance their products, their productivity and their quality, and to do so in an environmentally friendly way."

We made good progress toward this objective in the past year.

We carried out 4,228 assignments for 674 clients, 75% of whom were Nova Scotia companies. In these assignments, encompassing many technical fields, NSRFC provided technical information, carried out specialized analyses, tested materials and products, developed new products and processes, and evaluated applications of emerging technologies.

Our participation as a member of the National Research Council's Industrial Research Assistance Program (IRAP) continues to be a cornerstone of NSRFC's industry programs. We are pleased to have been associated with NRC for the past 39 years in delivering the IRAP program and its predecessors.

The Association of Provincial Research Organizations expanded its national presence and undertook several contracts utilizing its member organizations to span the country. With member organizations, including NSRFC, in nine provinces and two territories employing over 2,000 scientists, engineers and technologists, APRO is a significant Canadian Technology Network meeting the technological needs of Canada's small and medium-sized enterprises.

A highlight of the year was the announcement on March 26 by the Honourable John Crosbie, Minister responsible for the Atlantic Canada Opportunities Agency (ACOA), of a $5,000,000 Technical People in Industry program to help companies acquire new technical skills. This program, to be managed by NSRFC, follows from the very successful three-year pilot program initiated by NSRFC and funded by ACOA.

We opened the first CD-ROM-based standards library in Atlantic Canada, enabling industry to access quickly a wide range of international standards and specifications. The standards collection is part of a capital equipment upgrade assisted by ACOA. The upgrade also included equipment for industrial productivity and environmental testing.

The BIOTIA strategic alliance which we have been pursuing for several years was launched during the year. The Nova Scotia Research Foundation and the British Columbia Research Council are carrying out for BIOTIA a $1,000,000 project over 30 months to apply somatic embryogenesis technology to the production of commercial quantities of high-quality spruce seedlings for reforestation and horticulture. Participating in the alliance are two pulp and paper companies, Silvagen Inc. (Halifax-based forest biotech company), and the British Columbia Ministry of Forests. The Federal Department of Industry, Science and Technology and the Atlantic Canada Opportunities Agency are supporting the project.

On the financial front, we incurred a loss of $58,800 on total income of $6,873,767. While the numbers of clients and assignments were almost identical to last year, revenue declined 7.9%, reflecting fewer large contracts. Expenses fell by 9.6%, partly as the result of a large one-time expense incurred at the end of the previous year in connection with the early retirement plan. Eight staff members, representing 170 years of accumulated service, retired during the year under this plan.

President, T.B. Nickerson, P.Eng.

The Corporate Profile on the inside cover of this report reflects the new organizational structure which was put in place shortly after the year-end. This eliminates one level of management, and groups activities with common operational characteristics, providing more cohesive sets of cost-effective S&T services for our clients. We are committed to a total quality management model, involving everyone in the organization in a process of continuous improvement.

I would like to express my special thanks to the staff, the recent retirees and the members of the Board of Directors. The success of the Corporation in meeting the technological needs of Nova Scotia industry is the result of their dedicated service. We were pleased to welcome Mr. Ralston MacDonnell, President of Vaughan Engineering Associates Limited of Halifax, to the Board of Directors during the year.

Our long-term plan, reinforced by its close linkages with the provincial economic strategy, sets clear directions for the Corporation's next few years. While the timing of the economic recovery will to some extent dictate the pace, we expect to make further progress during the coming year. We look forward to working closely with industry, governments and our colleagues in the R&D community to ensure that the technology, productivity and quality levers are applied effectively to foster economic development.

The Honourable Thomas J. McInnis,
Minister, Department of
Economic Development,
Province of Nova Scotia,
Halifax, Nova Scotia

Sir:

I have the honour of submitting the forty-fifth Annual Report of the Nova Scotia Research Foundation Corporation.

Respectfully yours,

T. B. Nickerson, P.Eng., President
Nova Scotia Research
Foundation Corporation
Dartmouth, Nova Scotia
September 1, 1992

Analytical & Environmental Chemistry

Our analytical capability, particularly for environmental work, was enhanced significantly by the purchase of a GC/mass spectrometer (organics), an ICP spectrometer (metals) and an FTIR spectrometer (used oil analysis). Environment-related work accounted for about 65% of the analyses performed; among the most common were heavy metals, PCB's, asbestos, chlorinated phenols and polyaromatic hydrocarbons.

Industry provided about 80% of the work, with the remainder divided among governments, institutions and universities. Nearly 85% of our clients are small to medium-sized enterprises, for whom the group offers access to a very wide range of specialized analytical services.

Technician, Sherryl Isenor, uses gas chromatograph with purge and trap and mass selective detector.

With the retirement of our glassblower, Precision Glassblowing Limited has acquired NSRFC's equipment. Precision, located in the Woodside Technology Innovation Centre, offers the fabrication and repair services formerly provided at NSRFC as part of its glass-related business.

Microbiology

Demand for our microbiological services came primarily from Nova Scotia-based industry (90%), with tests performed on water, foods, process effluents and fuel samples. We also provided long-term quality control for a local producer of clinical products and conducted several sanitation surveys.

A new automated bacterial identification system has considerably enhanced our ability to identify species of bacteria.

Materials

Problem-solving for our Nova Scotia industrial clients increased over previous years. In spite of declining demand for welding qualification testing from offshore-related activity, use of our mechanical testing services was high. We introduced a new service to industry—testing dynamometers and load cells.

Demand for forensic engineering expertise increased; we investigated several vehicle and building fires and numerous vehicle component failures. Failure analyses were performed primarily on engine and machine parts and on components exhibiting environmental corrosion in service.

ETC Atlantic

In its first full year of operation, Environmental Test Centre Atlantic (ETC) expanded both its client base and its field of operation. We carried out sixty projects for forty clients. While most of the work comes from the Atlantic Region, we also tested for clients from as far away as Edmonton, Alberta.

ETC Atlantic tests manufactured products under a wide range of simulated environmental conditions. It also tests raw and finished materials for mechanical strength, hardness, durability, and corrosion resistance. These types of tests help manufacturers to demonstrate their products' compliance to standards and specifications, thus helping them to expand their markets. This type of testing can also help them to select the most suitable materials or parts for use in their products, or help them to discover design weaknesses or manufacturing defects in their products before they reach the marketplace.

This year's projects included:

- Determining the breaking strengths of power poles
- Testing the compatibility of anti-corrosion coatings on electrical components
- Measuring the efficiency of electric water heaters
- Determining the abrasion resistance of floor coating
- Subjecting a display panel to random-on-random vibration such as would be produced by an M1 tank
- Simulating rapid decompression of an air-launched data buoy from sea-level pressure to 10,000 feet altitude.

During the year, we added to our testing equipment suite with the acquisition of experimental modal analysis equipment and software, a stroboscope for resonance studies, sound measuring equipment, and a salt fog cabinet better suited to small samples such as paint chips.

Biotechnology

The BIOTIA project was launched early in the year. In collaboration with Silvagen Inc., Halifax, the lead firm in this consortium of Canadian forest products companies and provincial agencies, we are working to commercialize a tissue culture technology that rapidly produces large numbers of trees from a small quantity of elite seed. This technology, called somatic embryogenesis (SE), is potentially a significant new tool in the delivery of improved planting stock to forestry and horticulture. NSRFC has been focusing on using SE to develop superior ornamental spruce and on pilot-scale automation of SE techniques.

Now in its second year, a multi-year program to improve Nova Scotia Christmas trees is developing tissue culture techniques for rapid propagation of improved cultivars of balsam fir. NSRFC is working in conjunction with the Christmas Tree Council of Nova Scotia on this project.

We continue, in collaboration with the Nova Scotia Department of Natural Resources, to monitor the development of one-, two- and three-year-old nursery tree seedlings whose roots were inoculated with mycorrhizae. Since these fungi form beneficial associations with wild tree roots, inoculation of the nursery seedlings is expected to improve their survival and growth after outplanting.

Coal Technology

We finished a one-year technical and economic evaluation of processes for partial gasification of Nova Scotia coals. The process options were to produce mainly chemicals or mainly electricity from coal. The Federal Department of Energy, Mines and Resources and the Committee on Atlantic Coal funded this project.

Corrosion Engineering

We have completed studies on the stress corrosion behaviour of laser-treated brass and laser-treated copper-nickel alloy. The projects were funded by the Defence Research Establishment Atlantic to determine the susceptibility of specific alloys to stress corrosion cracking in seawater service.

Several Nova Scotia firms consulted our staff on material selection, material protection and design to avoid corrosion.

Wastewater Engineering

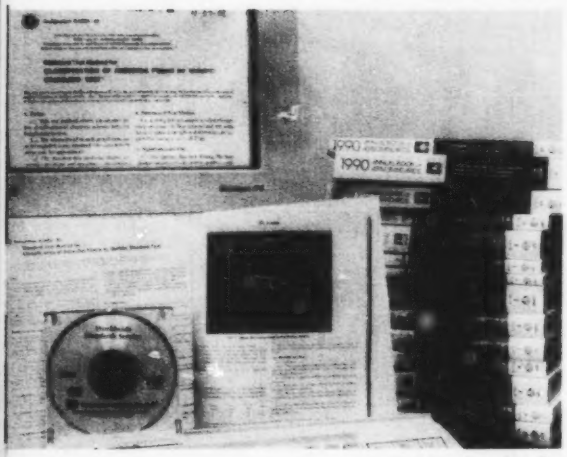
The Sydney Tar Ponds Clean-up Project has received NSRFC research and testing support since its inception. On-site testing and commissioning are nearly complete on the treatment facility built to remove polynuclear aromatic hydrocarbons from decant water. The project is financed by a federal-provincial subsidiary agreement.

Commercial interest in industrial wastewater treatment systems has increased significantly over the past few years, triggering NSRFC studies in this field for a variety of clients.

Technologist, Larry Giffin, operates pilot-scale wastewater treatment equipment.

Field Service

NSRFC is a member of the National Research Council's (NRC's) Industrial Research Assistance Program (IRAP) network. Our Industrial Technology Advisors (ITAs) contact small and medium enterprises (SMEs) throughout the province on a regular basis. The ITAs are hands-on engineers/scientists who have worked in industry and can relate to SMEs' technical problems and opportunities. ITAs help develop new products, advance the adoption/adaptation of new technologies and help clients become more competent in scientific and technical matters.



Information on CD-ROM disks provides up-to-date access to Standards.

NSRFC's five ITAs are located in Sydney, Truro, Wolfville and Dartmouth (2). NRC funds the direct costs of the ITAs while overhead costs for the group are covered by NSRFC from provincial funds. One ITA specializes in building construction, one in food, and one in aerospace; the other two have backgrounds in production management, plant engineering and maintenance.

In 1991/92 our ITAs made approximately 1400 face-to-face contacts with their clients and 80% of these were on site. They responded to more than 3000 technical inquiries and delivered almost 100 IRAP contribution programs. Our NSRFC ITAs, together with other network members in the province, assisted more than 200 companies in accessing approximately $1.9 million of NRC funding support.

Technical People in Industry

On March 26, 1992, the Hon. John C. Crosbie, Minister responsible for the Atlantic Canada Opportunities Agency, announced the continuation and expansion of Technical People in Industry (TPI). This announcement acknowledged the accomplishments of the three-year pilot TPI just ended and ensures that new technology will take root in even more Nova Scotia firms in the next three years.

The goal of the pilot TPI was to create tangible demonstrations of the benefit of technical skills in day-to-day operational activities, especially in small and medium-sized enterprises. The program supported adding a technical skill in firms by reimbursing a portion of the salary cost for up to one year. An advisor was available to aid the candidate in considering various pertinent factors and to increase links in the S&T community.

Seventy Nova Scotia companies have benefited to date. In over 78% of the completed projects, the candidate or a replacement has continued with the firm and accepted additional technical responsibilities. The advisor feature of the program has been used in 42% of the projects.

The renewed and expanded TPI continues the current program. Added features include support for a broader adoption of technology by a firm over a three-year period based on a Technology Plan developed in consultation with TPI.

Information Services

A valuable new addition to the library this year was the CD-ROM collection of standards issued by six major bodies (US DOD, ASME, SAE, ASTM, IEEE and ASHRAE), as well as indexes to over 380 other domestic and international standardizing agencies. On March 31, 1992, access to the standards information became available to industry at a cost-recovery fee.

Library services also include 20,000 books, journals and reports; an active interlibrary loan network; and access to over 400 databases on seven systems. With these assets our library is able to provide information and access to information sources to all sections of the Corporation and the industrial community.

Geophysical data activities included the sale of gravity data to an international mineral exploration company for its ongoing program in Nova Scotia, additional gravity data sales to a company working in Cape Breton, and an information search for a methane gas detection and measurement system for continuous monitoring of drilling operations in underground coal mines. The data activities resulted in the retrieval of a large number of gravity stations from some of the earliest gravity surveys carried out by NSRFC in 1952 and 1953.

Borehole logging services continued at the request of Nova Scotia engineering firms. Water supply boreholes were logged for a number of Nova Scotia municipalities and a coal exploration hole was logged in Cape Breton.

NOVA MAGNETICS LTD.

Nova Magnetics Ltd. (NML) markets NSRFC's patented magnetic drive technology. The major application of the technology is in high-horsepower, magnetically driven petrochemical pumps; the technology also has been applied in diving equipment.

Currently a wholly-owned subsidiary of NSRFC, NML is being groomed for transfer to the private sector. Preparations include further development in both technology and marketing while maintaining a high standard in meeting current production commitments.

Growth for NML has been spurred by continued interest in large pumps with magnetic drives, a unique niche market for Nova Magnetics. Recession and consolidation in the US refinery market have affected the introduction period of NML technology. However, the market continues to grow. We saw a fairly active year for diving-related magnetic products, representing a small but vigorous worldwide resurgence of offshore activity.

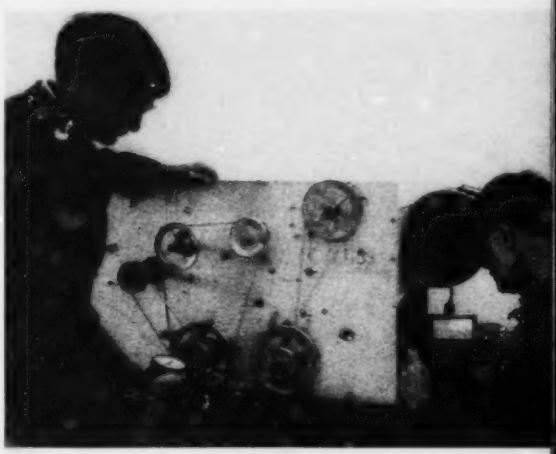
The year's achievements include:

- A major product redesign to meet strict reliability requirements for long periods of untended operation.
- A rigorous testing program to verify the longevity and reliability of the products.
- Marketing at Texas A&M Pump Users Symposium in Houston and at the Interflow Trade Show, Manchester, England.
- Integration of NML products into the lines of three major US pump manufacturers.

PRODUCT ENGINEERING

Product Engineering provides support for the engineering and marketing aspects of new product development, focusing on small and medium-sized enterprises (SMEs). Mechanisms for placing technology in the private sector include technical/economic feasibility analysis, assistance in implementing advanced manufacturing technology, identification of new technologies or applications which will benefit Nova Scotia SMEs and licensing technology developed at NSRFC. We emphasize research, development and evaluation of equipment for fisheries, farming and forestry.

During the year we studied potential applications for advanced industrial materials, designed a work station for a local food processor, aided the commercialization of a wheelchair stabilization platform developed by Dalhousie University, developed automated equipment for the fisheries industry, assisted in the development of an instrument for measuring bull semen viability, identified methods of mechanizing clone propagation of conifers and provided technical marketing support to Halifax County Aerotech Industrial Park.



Technologists, David Julien (left) and Bill Mills (right) measure performance parameters on a prototype small-fruit processor.

For the Atlantic Farm Mechanization Institute, we developed machinery for field packaging of cauliflower and for lifting strawberry bedding plants. We also carried out development work on blueberry-cleaning equipment.

Focal Technologies Incorporated, licensee of our rotary product technology, is thriving. Sales and market penetration both increased significantly in this third year of our leasing agreement.

With federal and provincial government support, we continued to assist companies in choosing and commissioning new CAD/CAM systems. The level of this activity has declined with the economic climate.

To the Chairman and Members of the Board of Directors of the Nova Scotia Research Foundation Corporation

I have audited the balance sheet of the Nova Scotia Research Foundation Corporation as at March 31, 1992 and the statements of revenues and expenses and retained earnings for the year then ended. These financial statements are the responsibility of the Corporation's management. My responsibility is to express an opinion on these financial statements based on my audit.

I conducted my audit in accordance with generally accepted auditing standards. Those standards require that I plan and perform an audit to obtain reasonable assurance whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation.

In my opinion, these financial statements present fairly, in all material respects, the financial position of the Corporation as at March 31, 1992 and the results of its operations for the year then ended in accordance with the accounting policies stated in Note 2 to the financial statements.

E.R. Salmon, F.C.A., Auditor General, Halifax, Nova Scotia, May 27, 1992

BALANCE SHEET as at March 31,1992

ASSETS	1992	1991
Current		
Cash	$ 422,505	$ 1,116,158
Short-term investments	991,760	3,237,414
Accounts receivable	1,384,270	1,600,430
Accrued contract revenue	97,349	49,337
Inventory	32,959	103,151
	2,928,843	6,106,490
Funds and Investments (Note 3)		
Research Endowment Fund	1,000,000	1,000,000
Nova Scotia First Fund	12,594,748	12,741,984
Other investments	73,463	21,614
	13,668,211	13,763,598
Deferred Development Costs (Note 4)	165,696	-
Fixed Assets		
Land and buildings	2,843,267	2,843,267
Equipment	1,640,269	1,837,020
	4,483,536	4,680,287
	$21,246,286	$24,550,375

LIABILITIES AND EQUITY	1992	1991
Current		
Accounts payable		
Trade	$ 367,504	$ 568,443
Province of Nova Scotia	2,015,705	3,903,220
Current portion of long term liability	54,070	239,038
Deferred revenue	284,018	892,982
	2,721,297	5,603,683
Long-Term		
Voluntary Early Retirement Plan (Note 6)	202,046	220,962
Fund Balances		
Research Endowment Fund	1,000,000	1,000,000
Nova Scotia First Fund	12,594,748	12,741,984
	13,594,748	13,741,984
Equity		
Contributed surplus	4,483,536	4,680,287
Retained earnings	244,659	303,459
	4,728,195	4,983,746
	$21,246,286	$24,550,375

Loan Guarantee (Note 5)

STATEMENT OF RETAINED EARNINGS
For the year ended March 31, 1992

	1992	1991
Balance, beginning of year	$303,459	$501,548
Deduct: Net loss	58,800	198,089
Balance, end of year	$244,659	$303,459

STATEMENT OF REVENUES AND EXPENSES
For the year ended March 31, 1992

	1992	1991
Revenues		
Contracts (Note 7)	$ 3,581,261	$ 3,716,763
Grant from Province of Nova Scotia	2,937,000	3,012,000
	6,518,261	6,728,763
Expenses		
Scientific and engineering	4,907,699	5,329,282
Administrative and occupancy	1,978,396	2,335,570
	6,886,095	7,664,852
	367,834	936,089
Other Income		
Income from discontinued operations (Note 8)	-	263,380
Investment Income		
Research Endowment Fund	102,815	120,346
Short-term investments	251,089	352,674
Interest on other investments	1,743	1,600
	355,647	738,000
Loss before Voluntary Early Retirement Plan Expense	12,187	198,089
Voluntary Early Retirement Plan Expense (Note 6)	46,613	-
Net Loss	$ 58,800	$ 198,089

NOTES TO THE FINANCIAL STATEMENTS,
MARCH 31, 1992

1. Authority

The Nova Scotia Research Foundation Corporation was established in 1975 by the Act to Establish the Nova Scotia Research Foundation Corporation. Its purpose is to assist in the economic development of Nova Scotia by promoting, stimulating and encouraging the effective utilization of science and technology by industry and government.

2. Accounting Policies

These financial statements have been prepared in accordance with generally accepted accounting principles modified by the Corporation's accounting treatment of fixed assets described in (c) below.

a)Short-term investments: Short-term investments are valued at the lower of cost or net realizable value.

b)Inventory : Inventory is valued at the lower of cost or net realizable value.

c)Fixed assets and contributed surplus: Fixed assets are acquired by purchase, donation or construction. The costs of purchased capital additions and the fair market values of donated capital additions are recorded as fixed assets with an offsetting credit to contributed surplus. When fixed assets are constructed by the Corporation, the related material, labour and overhead costs are included as fixed assets in the year of expenditure. When fixed assets are acquired out of the general revenues of the Corporation, they are charged to expenses in the year of acquisition. When the costs of equipment have been carried on the Corporation's financial statements for ten years, that cost is removed from both the fixed asset and contributed surplus accounts.

d)Government assistance: Funds received for the acquisition of equipment are offset against the cost of this equipment. Funds received for operating expenses incurred are recorded as revenue in the same year as the expenses were incurred.

3. Funds and Investments

Research Endowment Fund - Subject to any directions provided by the Governor in Council, the Fund is administered and controlled by the Corporation. The Fund is invested in a Province of Nova Scotia 7.35% promissory note which will mature November 13, 1992.

Nova Scotia First Fund - On March 30, 1989 the Governor-in-Council approved an appropriation in the amount of $10,000,000 to establish the Nova Scotia First Fund. The objective of the Fund is to encourage the development of high technology industries and the adaptation of new technologies in existing industries. The Corporation has appointed a committee to manage the Fund. On June 12, 1991, the Board approved the terms of reference for the Fund, subject to the approval of the Governor-in-Council. On March 11, 1992, the Board approved the transfer of the Fund to a trust account to be established by the Provincial Department of Finance. While receipt, disbursement and investing of funds will be administered by the Department of Finance, decisions concerning the loaning or granting of funds will rest with a new committee to be appointed by the Governor-in-Council, and the former committee will be disbanded. Accordingly, if the transfer is approved by the Governor-in-Council, subsequent financial statements of the Corporation will not include this Fund. Changes to the Fund balance in 1991-92 are summarized below:

Balance, beginning of year	$12,741,984
Add: Interest income	1,158,321
Less: Fund disbursements	(1,305,557)
Balance, end of year	$12,594,748

At March 31, 1992 the investments of the Fund, including principal and accrued interest were as follows:

Investment	Amount	Rate	Maturity Date
GMAC	$1,001,032	7.536%	June 30, 1992
Ford Credit	1,542,632	9.85%	Sept. 30, 1992
Province of Nova Scotia	5,291,139	8.5%	Sept. 30, 1992
GMAC	1,001,080	7.885%	Dec. 21, 1992
Montreal Trust	3,758,799	7.7%	March 25, 1993
Savings Account	66	-	-
	$12,594,748		

Other Investments - Other investments consist of the following:

Description	Cost
Pathfinder Med Limited - 20% ownership	$ 10
Nova Magnetics Limited - 100% ownership	3
Silvagen Inc. - Series I Convertible Debenture	20,000
Silvagen Inc. - Series II Convertible Debenture	50,000
Accrued Interest on Convertible Debentures	3,450
	$ 73,463

At any time prior to December 31, 1995 the Series I convertible debenture and its accrued interest, at the option of the Corporation, can be converted to common shares of Silvagen Inc. at a rate of one share for every $2, or can be repaid to the Corporation. At any time prior to March 31, 2002, the face amount of the Series II convertible debenture, at the option of the Corporation, can be converted to common shares of Silvagen Inc. at a rate of one share for every $2.50 or can be repaid to the Corporation, with accrued interest. The total payment by Silvagen Inc. in any one year is limited to 20% of its annual, after-tax net income.

4.Deferred Development Costs

The Corporation is in the process of commercializing its patented magnetic coupling technology. During 1991-92, significant expenditures were made in the creation of computer-assisted design models and the construction and testing of prototypes to evaluate the technology. A number of prototypes have been sold and customer response has led management to feel reasonably assured that the Corporation's investment in this technology will be recovered. Development costs associated with the technology have been deferred and will begin to be amortized with the commencement of commercial production.

5.Loan Guarantee

The Corporation has provided a guarantee of $50,000 to the Royal Bank of Canada as security for a loan and line of credit from the bank to the Applied Microelectronics Institute.

6.Voluntary Early Retirement Plan

In February 1991, the Province of Nova Scotia announced its intention to implement a voluntary early retirement plan. As an outside agency, the Corporation was invited to participate providing it agreed to pay the Province all costs of the plan not covered by the Public Service Superannuation Fund. By a resolution of the Board of Directors on March 18, 1991 the Corporation's participation was authorized. A liability in the amount of $256,116 has been accrued as at March 31, 1992 (1991-$460,000). This amount represents management's best estimate of the present value of the future payments required under the plan. Of the total liability, $54,070 (1991-$239,038) has been classified on the balance sheet as current and $202,046 (1991-$220,962) has been classified as long term. Aggregate payments required in each of the next five years are as follows:

1992-93	$54,070
1993-94	30,704
1994-95	31,932
1995-96	33,209
1996-97	34,538

7.Government Assistance

Contract revenues include government assistance of $713,530 (1991-$760,783) for direct expenses incurred under various federal and provincial agreements.

8.Discontinued Operations

Effective April 1, 1990 the Corporation ceased performing geophysical survey work. During the year, disposal of material assets used in this activity was carried out. Revenues and expenses associated with this activity were:

	1992	1991
Revenues	$ -	$271,890
Expenses	-	8,510
	$ -	$263,380

NRC IRAP NETWORK

The Industrial Research Assistance Program (IRAP) is a program of the National Research Council Canada (NRC) and is delivered to industry from coast to coast by 240 Industrial Technology Advisors (ITAs). There is an NRC IRAP Regional Director in each region who organizes program activities, approves programs and provides a vital link to NRC in Ottawa and to other technical expertise throughout the network.

In Nova Scotia IRAP is delivered by 12 ITAs located at the Technical University of Nova Scotia, Bedford Institute of Oceanography, Nova Scotia Research, the University College of Cape Breton, Nova Scotia Agriculture College, Acadia University, the Canadian Institute of Fisheries Technology, the Applied Microelectronics Institute, and the Construction Association of Nova Scotia. This strategic placement of ITAs in the province facilitates industry access to a broad range of scientific expertise.

The objective of IRAP is to help industry acquire new scientific capabilities and technologies to facilitate development of new and/or better products. To this end ITAs interact with clients, usually in the plant, working with company owners, managers, engineers or scientists to understand their technical problems and challenges. ITAs have a multitude of ways to help their clients. Some of the more common are:

Technology Transfer (C) - This involves an ITA working one-on-one with a company to improve and expand its technology base and solve problems or implement technology to make them more competitive. Through this interaction clients often receive technical information and advice from the ITA or other specialist within the national IRAP network. There are no charges for these advisory services.

Technology Enhancement (TE) - Funding assistance is available to a maximum of $15,000 per project to allow clients to obtain and install suitable technology identified from the IRAP program (C) above, or from other outside sources such as consultants, sub-contractors, students and in some cases their own staff.

Research, Development and Adaptation (RDA) - This vehicle is used mainly to help a company with research aimed at developing or adapting suitable technology to new or improved products or processes. It usually covers up to 100% of direct salary costs of clients' or sub-contractors' personnel plus partial consultant support. Maximum support can be up to $350,000 over a three-year period.

In Nova Scotia ITAs are generally responsible for a geographic territory and as a result get to know and understand their clients' needs. Most of them also have technical specialties which can be brought to bear on client problems.

For the IRAP Office nearest you, look in the yellow pages under "technology." You can be sure the ITA will relate to your questions and respond to your needs.

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